

Claims

What is claimed is:

1. An end fitting for a pipe, the end fitting comprising a housing defining a bore for receiving an end portion of the pipe, the surface of the housing defining the bore having at least one raised portion for engaging the corresponding outer surface of the pipe to provide a seal.
2. The end fitting of claim 1 wherein the raised portion is formed integrally with the housing.
3. The end fitting of claim 1 or 2 wherein the raised portion is in the form of an annular ring.
4. The end fitting of claims 1, 2, or 3 wherein there are at least two axially spaced raised portions.
5. The end fitting of claim 1 wherein the raised portion is formed by providing scallops in the housing surface.
6. The end fitting of claim 1 wherein the raised portion is formed by providing undulations in the housing surface.
7. The end fitting of claim 1 further comprising a radially extending, internally threaded, opening formed through the housing and extending to the bore, and a bolt threadedly engaging the opening and adapted to engage the pipe.

8. The end fitting of claim 1 wherein the bore is stepped to define at least two bore portions having different diameters, the raised portion being formed in the bore portion having the lesser diameter.
9. The end fitting of claim 1 or 8 further comprising a support ring extending within an end portion of the pipe so that the latter end portion of the pipe extends within the raised portion and the support ring.
10. The end fitting of claim 9 wherein the ring has an annular flange formed thereon that engages the shoulder defined between the two bore portions.
11. The end fitting of claim 10 wherein the flange extends radially outwardly from the flange.
12. The end fitting of claims 10 or 11 wherein the flange extends between the shoulder and the corresponding end of the pipe.
13. The end fitting of claim 8 wherein the pipe has multiple layers, wherein the end portions of all of the layers extend in the bore portion with the greater diameter; and wherein the end portion of less than all the layers extend in the bore portion with the lesser diameter.
14. The end fitting of claim 13 wherein the raised portion is formed in the bore portion with the lesser diameter.
15. A pipe assembly comprising an end fitting comprising a housing defining a bore for receiving an end portion of the pipe, the surface of the housing defining the bore having at least one raised portion; and a pipe having an end portion extending in the bore, the raised portion engaging the corresponding outer surface of the pipe to provide a seal.

16. The pipe assembly of claims 15 wherein the raised portion is formed integrally with the housing.
17. The pipe assembly of claim 15 or 16 wherein the raised portion is in the form of an annular ring.
18. The pipe assembly of claims 15, 16, or 17 wherein there are at least two axially spaced raised portions.
19. The pipe assembly of claim 15 wherein the raised portion is formed by providing scallops in the housing surface.
20. The pipe assembly of claim 15 wherein the raised portion is formed by providing undulations in the housing surface.
21. The pipe assembly of claim 15 further comprising a radially extending, internally threaded, opening formed through the housing and extending to the bore, and a bolt threadedly engaging the opening and adapted to engage the pipe.
22. The pipe assembly of claim 15 wherein the bore is stepped to define at least two bore portions having different diameters, the raised portion being formed in the bore portion having the lesser diameter.
23. The pipe assembly of claim 15 or 22 further comprising a support ring extending within an end portion of the pipe so that the latter end portion of the pipe extends within the raised portion and the support ring.
24. The pipe assembly of claim 23 wherein the ring has an annular flange formed thereon that engages the shoulder defined between the two bore portions.

25. The pipe assembly of claim 24 wherein the flange extends radially outwardly from the flange.
26. The pipe assembly of claims 24 or 25 wherein the flange extends between the shoulder and the corresponding end of the pipe.
27. The end fitting of claim 22 wherein the pipe has multiple layers, wherein the end portions of all of the layers extend in the bore portion with the greater diameter; and wherein the end portions of less than all the layers extend in the bore portion with the lesser diameter.
28. The pipe assembly of claim 27 wherein the raised portion is formed in the bore portion with the lesser diameter.
29. A method of assembling a pipe assembly comprising forming a bore in an end fitting, forming at least one raised portion on the surface of the housing defining the bore; and inserting an end portion of a pipe in the bore with the raised portion engaging the corresponding outer surface of the pipe to provide a seal.
30. The method of claims 29 wherein the raised portion is formed integrally with the housing.
31. The method of claim 29 or 30 wherein the raised portion is in the form of an annular ring.
32. The method of claims 29, 30, or 31 wherein there are at least two axially spaced raised portions.

33. The method of claim 29 wherein the step of forming comprises providing scallops in the housing surface.
34. The method of claim 29 wherein the step of forming comprises providing undulations in the housing surface.
35. The method of claim 29 further comprising forming a radially extending, internally threaded, opening through the housing and extending to the bore, and threadedly engaging the opening with a bolt and extending the bolt through the opening so that it engages the pipe.
36. The method of claim 29 further comprising stepping the bore to define at least two bore portions having different diameters, the raised portion being formed in the bore portion having the lesser diameter.
37. The method of claim 29 or 36 further comprising inserting a support ring within an end portion of the pipe so that the latter end portion of the pipe extends within the raised portion and the support ring.
38. The method of claim 37 further comprising providing an annular flange on the ring, the step of inserting comprising disposing the flange in engagement with the shoulder defined between the two bore portions.
39. The method of claim 38 wherein the flange extends radially outwardly from the flange.
40. The method of claims 38 or 39 wherein the flange extends between the shoulder and the corresponding end of the pipe.

41. The method of claim 36 further comprising providing the pipe with multiple layers, disposing the end portions of all of the layers in the bore portion with the greater diameter; and disposing the end portions of less than all the layers in the bore portion with the lesser diameter.

42. The method of claim 41 wherein the raised portion is formed in the bore portion with the lesser diameter.